An Account

Of the Invention of Grinding Optick *and* Burning-*Glaſſes, of a Figure not-*Spherical, *produced before the* Royal Society.

THe ingenious and induſtrious *Francis Smethwick* Eſquire, Fellow of the *Royal Society*, having for divers years painfully ſearch'd after the way of grinding Glaſſes *not-Spherical*, affirms, that at length he hath now found it; for the proof of which, he lately (viz. *February* 27. 166⅞.) produced before the ſaid Society certain *Specimina* of that Invention, which were a *Teleſcope*, a *Reading* and two *Burning*-Glaſſes.

The *Teleſcope* was about *four* foot long, furniſh'd with *four* Glaſſes, whereof the three *Ocular* ones, Plano-convex, were of this newly-invented *not-Spherical* Figure, and the *fourth* a *Spherical* Object-glaſs. This being compared with a common, yet very good *Teleſcope*, longer than it by about *four* inches, and turned to ſeveral Objects, was found by thoſe of the ſaid Society that look'd through them both, to *exceed* the other in goodneſs, by taking in a greater Angle, and repreſenting the Objects more exactly in their reſpective proportions, and enduring a greater Aperture, free from Colours.

The *Reading* Glaſs of the ſame Figure being compared with a common *Spherical*-Glaſs, did far excell it, by magnifying the Letters, to which it was applied, up to the very edges, and by ſhewing them *diſtinctly* from one brim through the Center to the other, which the *Spherical* Glaſs came far ſhort of. And this effect the new-figur'd Glaſs perform'd only on one of its ſides, and not on the other, as being of a different figure from *Spherical*-Glaſſes, which perform their effect near equally on both ſides.

Laſtly, The two *Burning-Concaves* of this new-invented figures were, the *one* of *ſix* inches Diameter, its *focus* three inches diſtant from the Center thereof; the *other* of the ſame Diameter, but leſs concave, and its *focus* 10 inches diſtant. Theſe, when approach'd to a large Candle lighted, did ſomewhat warm the faces of thoſe, that were 4 or 5 foot diſtant at leaſt, and when

held to the fire, burned Gloves and Garments at the diſtance of about three foot from the Fire.

Which were the particulars, the *R. Society* obſerved in theſe Glaſſes, and gave order to be Regiſtred in their Books; encouraging the *Inventor* to proceed in this Work with all poſſible care and diligence, for enabling himſelf to inſtruct others in the way of Grinding theſe *Glaſſes* with facility.

The *Inventor* having declared his reſolution to do ſo, added theſe Particulers. *Firſt*, That the Lord Biſhop of *Salisbury*, *Seth Ward* (who was then abſent from the Meeting of the *Society*) had been by, when the *deeper* of his two Concaves turned a piece of Wood into flame in the ſpace of *ten* ſeconds of time; and the *ſhallower*, in *five* ſeconds at moſt, in the ſeaſon of *Autumn*, about 9 of the Clock in the Morning, the Weather gloomy*. *Secondly*, That the deeper Concave, when held to a lucid Body, would caſt a Light ſtrong enough to read by at a conſiderable diſtance. *Thirdly*, That expoſing the ſame to a Northern Window, on which the Sun ſhined not at all, or very little, he had perceived, that it would warm ones hand ſenſibly, by collecting the warm'd Air in the day-time, which it would not do after Sun-ſet.

* *This the ſaid judicious Prelate at another Meeting of the* Royal Society, *atteſted to be true.*

An Account

Of ſome Obſervations made by Mr. Samuel Colepreſſe *at and nigh* Plimouth, *An.* 1667. *by way of Anſwer to ſome of the* Quæries *concerning* Tides, *propos'd* Numb. 17. *and* 18.

1. OUr *Diurnal* Tides from about the latter end of *March* 'till the latter end of *September*, are about a foot higher (*perpendicular*, which is always to be underſtood) in the *Evening* than in the *Morning*, that is, in every Tide that happens after 12 in the day before 12 at night.

2. On the contrary, the *Morning* Tides from *Michaelmas* 'till our *Lady-day* in *March* again, are conſtantly higher by about a foot than thoſe that happen in the *Evening*. And this proportion holds in *both*, after the gradual increaſe of the Tides riſing